Foreword

How Forecasts Are Made

Most of the annual streamflow in the Western United States originates as snowfall. This snowfall accumulates high in the mountains during winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Predictions are based on careful measurements of snow water equivalent at selected index points. Precipitation, temperature, soil moisture and antecedent streamflow data are viewed in conjunction with snowpack data to prepare runoff forecasts. This report presents a comprehensive picture of water supply outlook conditions for areas dependent upon surface runoff. It includes selected streamflow forecasts, summarized snowpack and precipitation data, reservoir storage data and narratives describing current conditions.

Streamflow forecasts are cooperatively generated by Soil Conservation Service and National Weather Service hydrologists. Forecasts become more accurate as more data affecting runoff becomes known. For this reason, forecasts are issued that reflect three future precipitation conditions — Below Normal, Average, and Above Normal. These forecasts are termed reasonable minimum, most probable, and reasonable maximum. Actual streamflow can be expected to fall between the lower and upper forecast values eight out of ten years.

Snowpack data are obtained by using a combination of manual and automated measurement methods. Manual readings of snow depth and water equivalent are taken at locations called snow courses on a monthly or semi-monthly schedule during the winter. In addition, snow water equivalent, precipitation, temperature, and other parameters are monitored on a daily basis and transmitted via radio telemetry to central data collection facilities. Both monthly and daily data are used to project snowmelt runoff.

For More Information

Copies of Monthly Water Supply Outlook Reports and other reports may be obtained from the states listed below. Because of the limited space, snow survey measurements are not published in monthly reports. An annual snow survey data summary is published by the Soil Conservation Service for each of the western states. Historical snow survey data may be obtained at those same offices.

STATE	ADDRESS
Alaska	201 East 9th Ave., Suite 300, Anchorage, AK 99501-3687
Arizona	201 East Indianola, Suite 200, Phoenix, AZ 85012
Colorado (New Mexico)	2490 West 26th Ave., Denver, CO 80211
Idaho	304 North 8th Street, Room 345, Boise, ID 83702
Montana	10 East Babcock, Room 443, Federal Building, Bozeman, MT 59715
Nevada	50 South Virginia Street, Third Floor, Reno, NV 89505
Oregon	1220 Southwest 3rd Ave., 18th Floor, Portland, OR 97204
Utah	4402 Federal Building, 125 South State Street, Salt Lake City, UT 84147
Washington	360 U.S. Court House, Spokane, WA 99201
Wyoming	Federal Building, 100 East "B" Street, Casper, WY 82602

In addition to state reports, a Water Supply Outlook for the Western United States is published by the Soil Conservation Service and National Weather Service monthly, January through May. Reports may be obtained from the Soil Conservation Service, West National Technical Center, 511 Northwest Broadway, Room 547, Portland, OR 97209.

Published by other agencies:

Water Supply Outlook Reports prepared by other agencies include: California — Snow Survey Branch, California Department of Water Resources, P.O. Box 388, Secramento, CA 90502; British Columbia — The Ministry of Environment, Water Investigations Branch, Parliament Buildings, Victoria, British Columbia, V8V 1X5; Yukon Territory — Department of Indian and Northern Affairs, Northern Operations Branch, 200 Range Road, Whitehorse, Yukon Territory, Y1A 3V1; Alberta, Saskatchewan, and N.W.T. — The Water Survey of Canada, Inland Waters Branch, 110-12 Avenue S.W., Calgary, Alberta, T3C 1A6.

Montana
Water Supply Outlook

and

Federal – State – Private
Cooperative Snow Surveys

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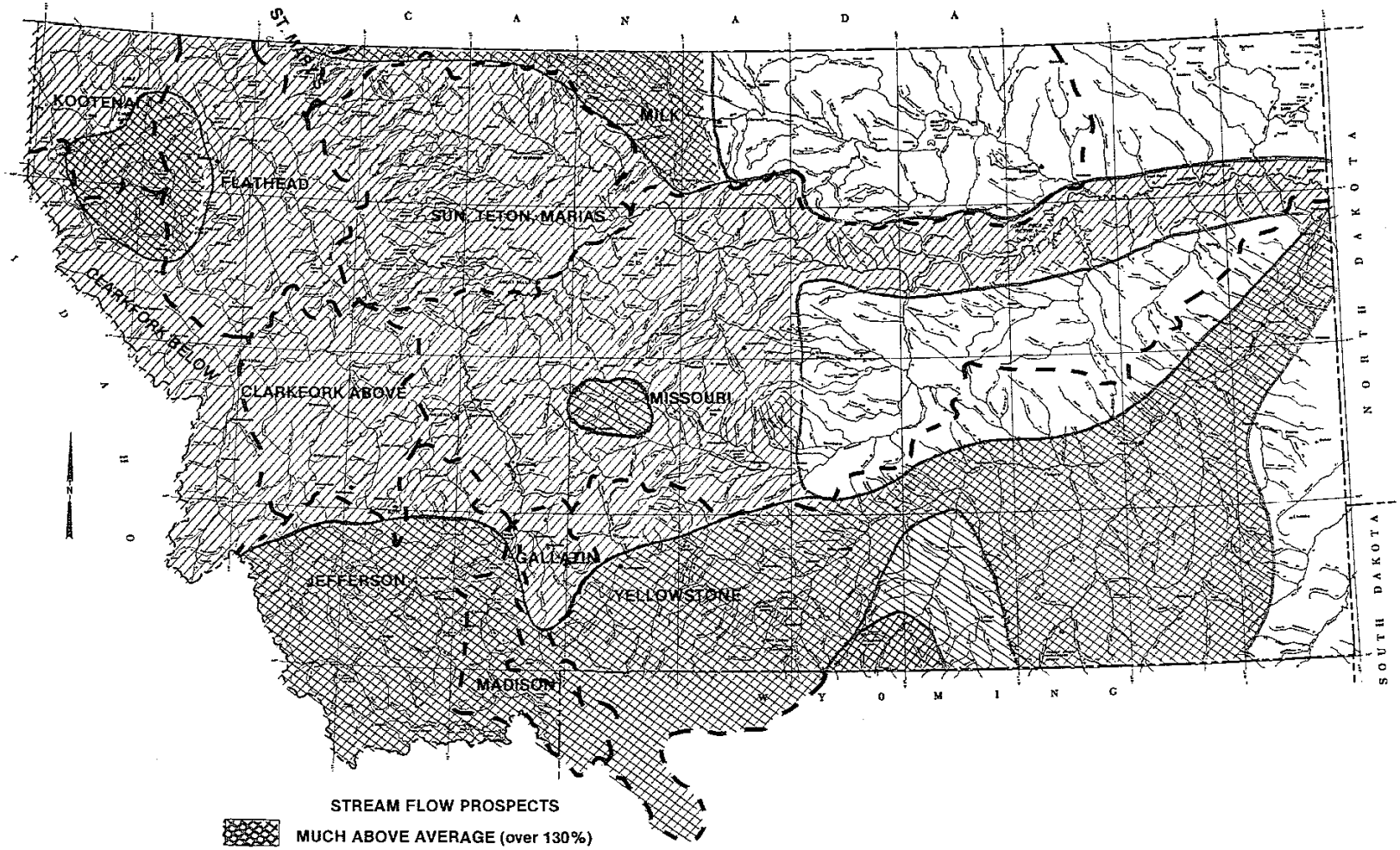
U.S. DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE



STREAMFLOW PROSPECTS FOR MONTANA

Spring and Summer Period

STREAM FLOW PROSPECTS

- MUCH ABOVE AVERAGE (over 130%)
- ABOVE AVERAGE (110-130%)
- NEAR AVERAGE (90-110%)
- BELOW AVERAGE (70-90%)
- MUCH BELOW AVERAGE (below 70%)
- NOT FORECAST

April 1, 1986

0 25 50 75 100 MI

0 50 100 150 KM

SOURCE: Information provided by SCS Snow Survey Personnel.

JUNE 1985 4-R-39296

USDA SCS FORT WORTH, TEXAS 1985

GENERAL OUTLOOK

SUMMARY:

Below average March precipitation and melt generated by warm temperatures have reduced the snowpack levels reported on March 1. Snowpacks in extreme southwest Montana and near the Montana-Wyoming border are near normal, but all other areas have below to well below average snow cover. Generally, the northern areas have the poorest snowpack. Many areas have less snowpack now than was measured a year ago. Temperatures and melt conditions seem to be about a month earlier than normal. Streamflows are forecast to be near to a little below average in the Jefferson, Madison and Yellowstone River drainages but below to well below average in other areas. Some streams with lower elevation headwaters have already reached their peak snowmelt runoff. Widespread irrigation water shortages are expected by late June to early July over most of the state for irrigators not having stored water.

SNOWPACK:

Snowpack levels are about 10 percent less than reported on March 1. Warm temperatures created melt at low and mid-elevations. Also, mountain precipitation was below average in all areas. Snowpack is well below average in northern areas increasing to below average through most of central Montana. The only areas reporting near average snowpack are along the Continental Divide from southwest of Helena to Yellowstone National Park, throughout most of the Yellowstone River headwaters and in the headwaters of the Clarks Fork of the Yellowstone, Bighorn, Little Bighorn, Tongue and Powder Rivers in Wyoming.

PRECIPITATION:

Mountain precipitation during March was generally about 60 to 70 percent of average over most of the state. The lower Clark Fork area, west of Missoula, was a little better but still only around 90 peroent of average. The St. Mary and Milk River headwaters also reported about 80 percent of average moisture in March. Many valley locations recorded well below average precipitation for the month. If the weather patterns do not improve, Montana can expect another dry spring and summer. For some areas, this could be the fifth consecutive year of below average precipitation.

RESERVOIRS:

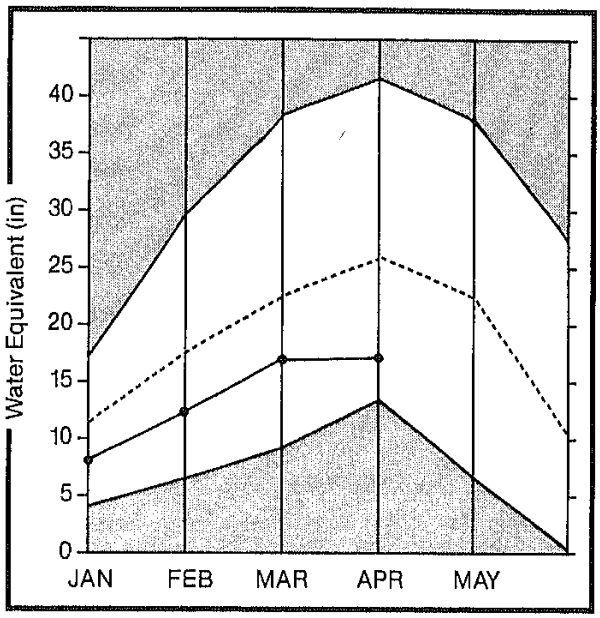
Most irrigation reservoirs across the state have average or above average storage due to good carryover from August and September rains and early season runoff that started in late February. Storage in most large and multipurpose reservoirs is near or above average.

STREAMFLOW:

Except for average or above average runoff from streams with headwaters in Wyoming, below average streamflows are forecast for all streams and rivers in Montana. Well below average runoff is expected from streams in the Gallatin Valley and most streams in northwest and north central Montana. Except for areas in extreme southwest Montana and near the Montana-Wyoming border, most areas can expect shortages of irrigation water supplies by late June to early July. If above normal temperatures continue, runoff will occur earlier than usual and will create additional water shortage problems during the main irrigation season.

Kootenai Basin

Mountain snowpack* (inches)



* Kootenai in Montana

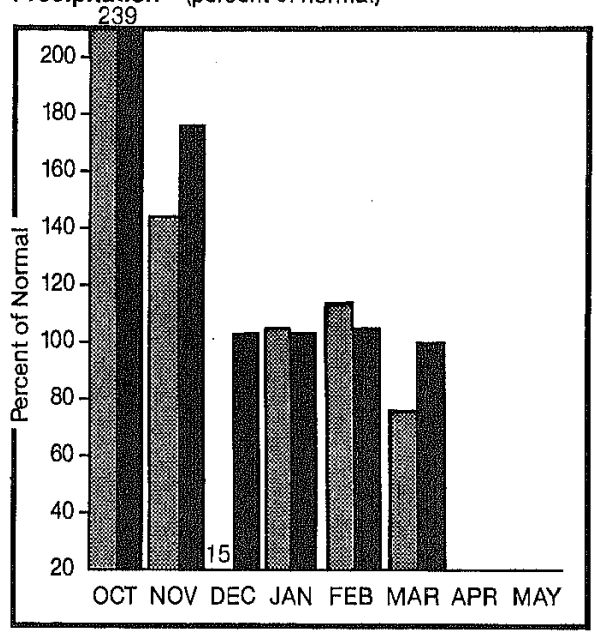
Maximum

Minimum

Average

Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation

Year to date precipitation

WATER SUPPLY OUTLOOK:

Snowpack conditions deteriorated in March as a result of below average mountain precipitation and melt created by warm temperatures. Snowpack is better in British Columbia than in Montana. Streamflow on the Kootenai River is forecast to be below average while tributary streams in Montana are predicted to have well below average runoff for the spring and summer months. Some smaller streams with low elevation headwaters may have already reached their peak snowmelt runoff.

For more information contact your local Soil Conservation Service office.

KOOTENAI RIVER BASIN in Montana

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	20 YR. AVE. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVE.)	REAS. MAX. (% AVE.)	REAS. MIN. (% AVE.)	PEAK FLOW (CFS)	PEAK DATE	LOW FLOW (CFS)	LOW DATE
KOOTENAI RIVER blw Libby Dam x	APR-JUL	6020.0	5310.0	88	110	66				
	APR-SEP	7041.0	6210.0	88	110	66				
FISHER RIVER near Libby	APR-JUL	248.0	162.0	65	90	41				
	APR-SEP	264.0	174.0	65	90	42				
YAAK RIVER near Troy	APR-JUL	500.0	345.0	69	93	45				
	APR-SEP	523.0	373.0	71	95	47				
KOOTENAI RIVER at Leonia x	APR-JUL	7498.0	6220.0	82	103	63				
	APR-SEP	8602.0	7130.0	82	103	63				
	APR-JUN	6051.0	4930.0	81	101	61				

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	xx USEABLE STORAGE xx THIS YEAR	LAST YEAR	AVE.
LAKE KOOCANUSA	5748.0	2238.0	1801.0	1694.0

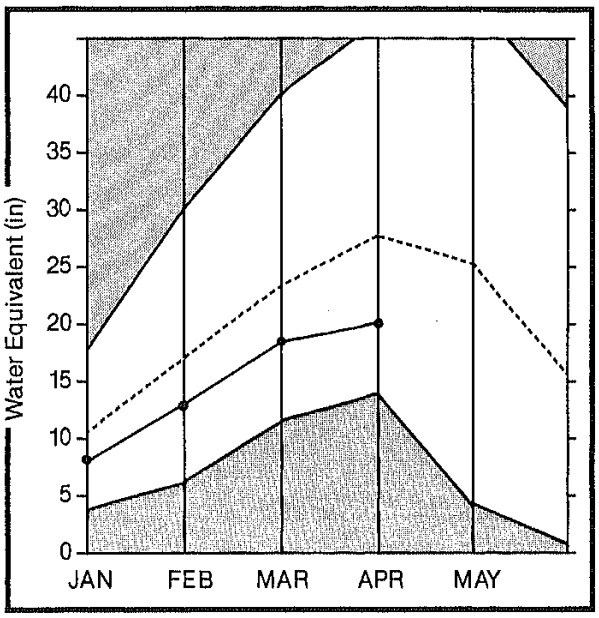
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVE.0	THIS YEAR AS % OF LAST YR.	AVERAGE
EAST KOOTENAI in B.C.	29	100	83
KOOTENAI in MONTANA	31	67	65
KOOTENAI ab BONNERS FERRY	60	78	71

xCorrected for upstream diversions or changes in reservoir storage.
Average is for 1961-80 period.

Flathead Basin

Mountain snowpack* (inches)



* Flathead

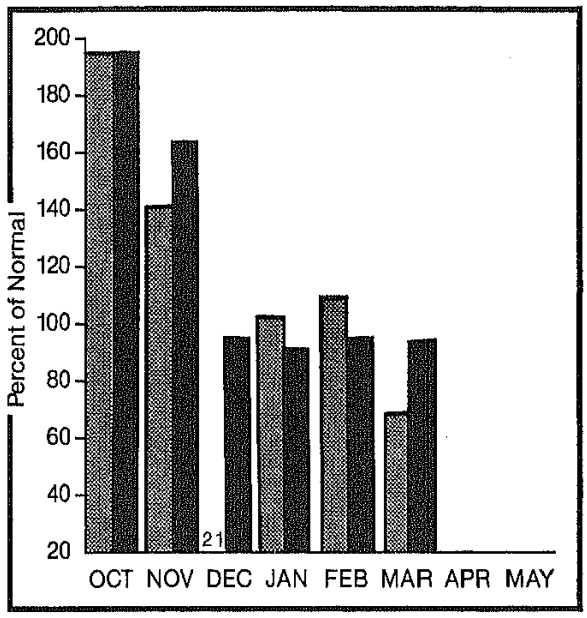
Maximum

Minimum

Average

Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation

Year to date precipitation

WATER SUPPLY OUTLOOK:

Below average mountain precipitation and warmer temperatures during March have lowered snowpack percentages. Some higher elevations have fair snowpack but most areas including lower elevations have well below average amounts of snow cover. Spring and summer streamflows are forecast to be below average. Some low elevation streams have already had their peak snowmelt runoff.

For more information contact your local Soil Conservation Service office.

FLATHEAD RIVER BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	20 YR. AVE. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVE.)	REAS. MAX. (% AVE.)	REAS. MIN. (% AVE.)	PEAK FLOW (CFS)	PEAK DATE	LOW FLOW (CFS)	LOW DATE
NF FLATHEAD near Columbia Falls	APR-JUL	1732.0	1300.0	75	89	61				
	APR-SEP	1913.0	1440.0	75	89	61				
	APR-JUN	1471.0	1120.0	76	90	62				
NF FLATHEAD near West Glacier	APR-JUL	1713.0	1410.0	82	96	68				
	APR-SEP	1869.0	1510.0	80	95	67				
	APR-JUN	1453.0	1220.0	83	98	70				
SF FLATHEAD near Columbia Falls x	APR-JUL	2142.0	1750.0	81	100	64				
	APR-SEP	2278.0	1870.0	82	101	63				
	APR-JUN	1886.0	1550.0	82	100	64				
FLATHEAD at Columbia Falls x	APR-JUL	5721.0	4600.0	80	94	66				
	APR-SEP	6208.0	4950.0	79	94	66				
	APR-JUN	4921.0	4020.0	81	96	68				
SWAN RIVER near Big Fork	APR-JUL	604.0	530.0	87	102	74				
	APR-SEP	689.0	600.0	87	101	73				
FLATHEAD RIVER near Polson x	APR-JUL	6712.0	5400.0	80	94	66				
	APR-SEP	7278.0	5830.0	80	94	66				
	APR-JUN	5759.0	4685.0	81	95	67				

RESERVOIR STORAGE (1000AF)

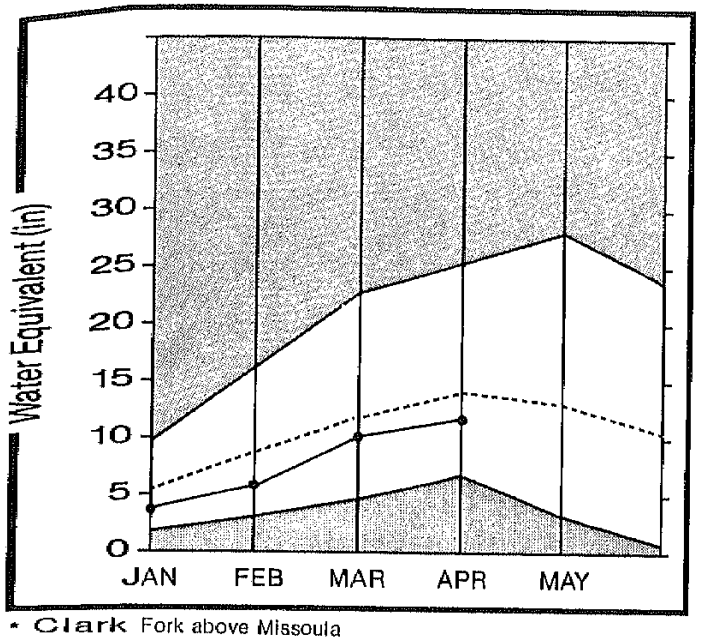
RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVE.
CAMAS (4)	45.2	31.3	18.0	23.1
MISSION VALLEY (8)	100.0	50.3	37.6	41.1
HUNGRY HORSE	3451.0	2515.0	1796.0	2054.0
FLATHEAD LAKE	1791.0	805.3	649.3	762.0

WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVE.D	THIS YEAR AS % OF LAST YR.	AVERAGE
NORTH FORK FLATHEAD	16	69	65
MIDDLE FORK FLATHEAD	12	78	73
SOUTH FORK FLATHEAD	13	73	70
STILLWATER-WHITEFISH	9	73	65
SWAN	11	79	76
LITTLE BITTERROOT	9	61	66
FLATHEAD	50	73	70

Clark Fork Basin above Missoula

Mountain snowpack* (inches)



* Clark Fork above Missoula

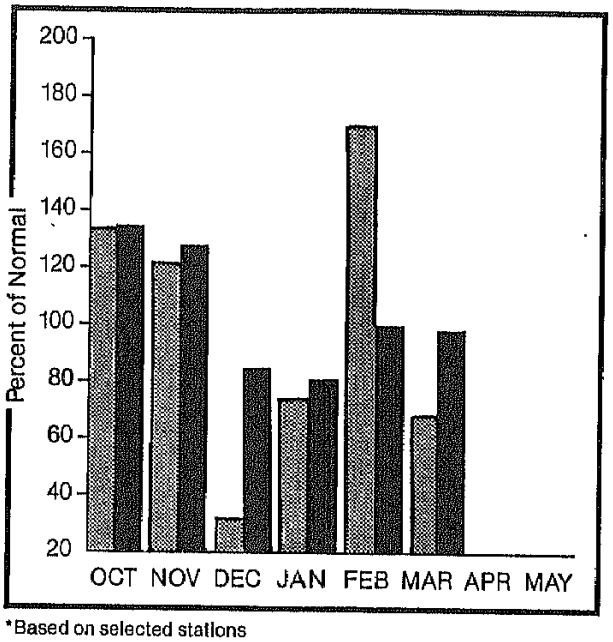
Maximum

Minimum

Average

Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation

Year to date precipitation

WATER SUPPLY OUTLOOK:

Snowpack conditions deteriorated in March. Below average mountain precipitation and above average melt dropped the snowpack 5 to 10 percent since March 1. The mountains around Butte and Anaconda have a little better snowpack than other areas. The Blackfoot has less snow than a year ago while the Clark Fork has about the same. Spring and summer runoff is expected to be 15 to 20 percent below average on most streams. Shortages of irrigation water supplies can be expected by late June or early July.

For more information contact your local Soil Conservation Service office.

CLARK FORK RIVER BASIN above Missoula

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	20 YR. AVE. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVE.)	REAS. MAX. (% AVE.)	REAS. MIN. (% AVE.)	PEAK FLOW (CFS)	PEAK DATE	LOW FLOW (CFS)	LOW DATE
NOULTON RESERVOIR Inflow (MG)*	APR-JUL	263.0	215.0	81	106	59				
	APR-JUN	237.0	195.0	82	106	58				
WARM SPRINGS CR at Meyers Dam *	APR-JUL	37.8	32.0	84	108	61				
	APR-SEP	46.8	39.7	84	109	60				
FLINT CREEK near Southern Cross *	APR-JUL	15.4	12.9	83	117	52				
	APR-SEP	18.3	15.3	83	120	49				
FLINT CREEK below Boulder Creek *	APR-JUL	59.9	48.5	80	115	47				
	APR-SEP	75.8	61.5	81	115	47				
LOWER WILLOW CR RES Inflow *	APR-JUL	14.9	10.9	72	107	40				
	APR-SEP	15.7	11.5	73	108	30				
N. FK. ROCK CRK near Philipsburg	APR-JUL	70.5	61.7	87	112	64				
	APR-SEP	78.2	68.3	87	111	64				
NEVADA CREEK near Finn	APR-JUL	21.3	14.8	69	103	38				
	APR-SEP	23.0	16.0	69	104	35				
BLACKFOOT RIVER near Bonner	APR-JUL	904.0	658.0	72	97	59				
	APR-SEP	999.0	745.0	74	89	61				
	APR-JUN	782.0	565.0	72	86	58				
CLARK FORK RIVER above Milltown *	APR-JUL	708.0	555.0	78	109	48				
	APR-SEP	816.0	644.0	78	109	49				
	APR-JUN	597.0	470.0	78	109	49				
CLARK FORK RIVER above Missoula	APR-JUL	1612.0	1210.0	75	99	51				
	APR-SEP	1815.0	1400.0	77	101	53				
	APR-JUN	1379.0	1040.0	75	99	51				

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVE.
GEORGETOWN LAKE	31.0	25.4	25.9	23.7
LOWER WILLOW CREEK	4.9	4.9	1.3	1.8
NEVADA CREEK	12.6	11.0	---	7.4

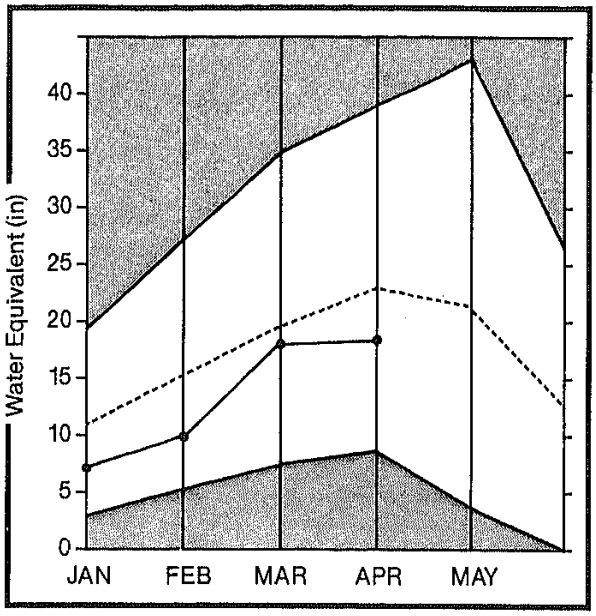
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVE.0	THIS YEAR AS % OF LAST YR.	AVERAGE
CLARK FORK ab BLACKFOOT	46	99	85
BLACKFOOT	22	78	66
CLARK FORK above MISSOULA	62	93	79

*Corrected for upstream diversions or changes in reservoir storage.
Average is for 1961-80 period.

Clark Fork Basin below Missoula

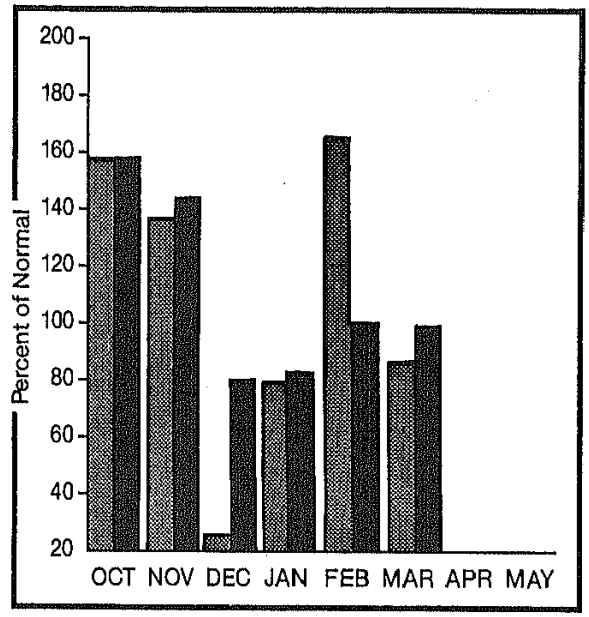
Mountain snowpack* (inches)



* Bitterroot

Maximum
Minimum
Average
Current

Precipitation* (percent of normal)



*Based on selected etetions

Monthly precipitation
Year to date precipitation

WATER SUPPLY OUTLOOK:

Snowpack percentages have dropped about 10 peroent since March 1. This is a result of below average mountain precipitation and melt caused by warm temperatures during March. There is less water stored in the snowpack than there was last year at this time. Spring and summer streamflows are forecast to be below average in all drainages. Shortages of irrigation water can be expected by late June to early July.

For more information contact your local Soil Conservation Service office.

CLARK FORK RIVER BASIN below Missoula

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	20 YR. AVE. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVE.)	REAS. MAX. (% AVE.)	REAS. MIN. (% AVE.)	PEAK FLOW (CFS)	PEAK DATE	LOW FLOW (CFS)	LOW DATE
CLARK FORK RIVER above Missoula	APR-JUL	1612.0	1210.0	75	99	51				
	APR-SEP	1815.0	1400.0	77	101	53				
	APR-JUN	1379.0	1040.0	75	99	51				
W.F. BITTERROOT RIVER nr Conner x	APR-JUL	164.0	135.0	82	106	59				
	APR-SEP	178.0	145.0	81	106	57				
BITTERROOT RIVER near Darby	APR-JUL	532.0	455.0	85	110	61				
	APR-SEP	580.0	490.0	84	106	61				
	APR-JUN	464.0	400.0	86	110	62				
SKALKAHO CREEK near Hamilton	APR-JUL	48.7	43.2	88	103	74				
	APR-SEP	56.0	49.5	88	102	75				
BURNT FORK CR nr Stevensville x	APR-JUL	32.2	27.7	86	109	62				
	APR-SEP	37.4	32.0	85	110	61				
BITTERROOT RIVER at Missoula x	APR-JUL	1384.0	1165.0	84	108	60				
	APR-SEP	1504.0	1260.0	83	108	60				
	APR-JUN	1191.0	1010.0	84	109	61				
CLARK FORK RIVER below Missoula	APR-JUL	2996.0	2375.0	79	95	63				
	APR-SEP	3319.0	2650.0	79	96	64				
	APR-JUN	2570.0	2050.0	79	96	64				
CLARK FORK RIVER at St. Regis	APR-JUL	3926.0	3100.0	78	101	57				
	APR-SEP	4411.0	3480.0	78	101	57				
	APR-JUN	3426.0	2710.0	79	101	57				
CLARK FORK RIVER near Plains x	APR-JUL	11071.0	8450.0	76	91	61				
	APR-SEP	12153.0	9280.0	76	91	61				
	APR-JUH	9459.0	7050.0	74	90	60				
THOMPSON RIVER near Thompson Falls	APR-JUL	233.0	157.0	67	89	45				
	APR-SEP	261.0	180.0	68	91	47				
PROSPECT CREEK at Thompson Falls	APR-JUL	132.0	100.0	75	100	52				
	APR-SEP	142.0	110.0	77	101	54				
CLARK FORK at Whitehorse Rapids x	APR-JUL	12351.0	9370.0	75	92	60				
	APR-SEP	13575.0	10300.0	75	92	60				
	APR-JUN	10570.0	8025.0	75	92	60				

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVE.
PAINTED ROCKS LAKE		NO REPORT		
NOXON RAPIDS	335.0	299.6	156.2	197.6
COMO	34.9	23.0	10.1	14.6

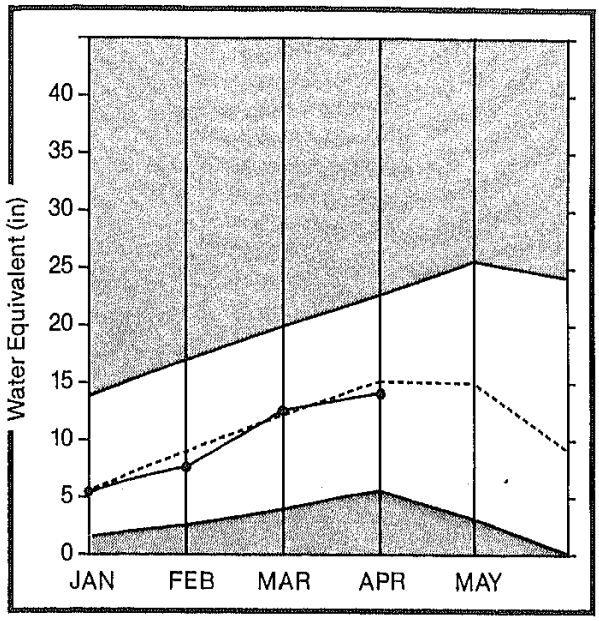
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVE.D	THIS YEAR AS % OF LAST YR.	THIS YEAR AS % OF AVERAGE
CLARK FORK above MISSOULA	62	93	79
BITTERROOT	22	93	80
LWR CLARK FK blw MISSOULA	20	86	85
BITTERROOT & LWR C.F.	41	89	84
CLARK FORK TOTAL	97	90	81
FLATHEAD	50	73	70
PEND O'REILLE	141	83	77

changes in reservoir storage.

Jefferson Basin

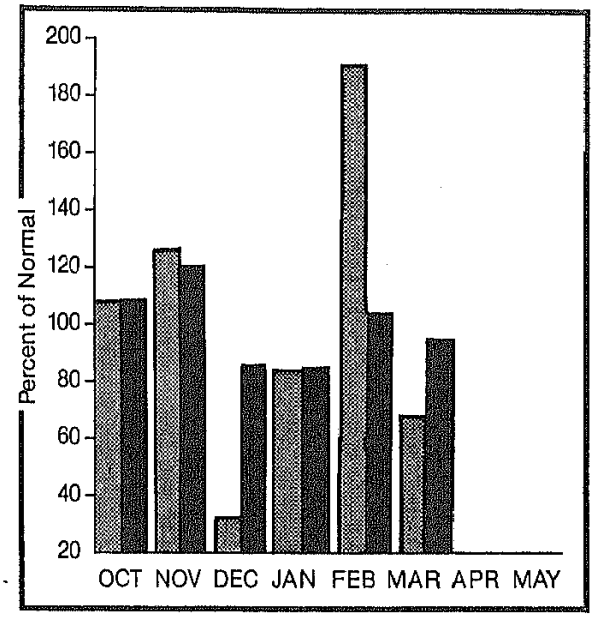
Mountain snowpack* (inches)



* Jefferson

Meximum
Minimum
Average
Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation
Year to date precipitation

WATER SUPPLY OUTLOOK:

Snowpack in the Beaverhead and upper Big Hole is near to a little below average and a little below average in the lower Big Hole, Ruby and Boulder headwaters. Melt and below average mountain precipitation have decreased the snowpack percentages about 10 percent since March 1. Streamflow for the spring and summer is forecast to be a little below average for most drainages. Irrigation water supplies should be near to a little below average for most streams.

For more information contact your local Soil Conservation Service office.

JEFFERSON RIVER BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	20 YR. AVE. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVE.)	REAS. MAX. (% AVE.)	REAS. MIN. (% AVE.)	PEAK FLOW (CFS)	PEAK DATE	LOW FLOW (CFS)	LOW DATE
RED ROCK RIVER near Monida *	APR-JUL	96.0	87.0	90	121	60				
	APR-SEP	103.0	93.0	90	120	60				
BEAVERHEAD RIVER near Grant *	APR-JUL	137.0	128.0	93	123	64				
	APR-SEP	158.0	142.0	89	120	60				
BEAVERHEAD RIVER at Barratts a	APR-JUL	180.0	165.0	91	122	62				
	APR-SEP	209.0	190.0	90	121	61				
RUBY RIVER near Alder	APR-JUL	85.0	77.0	90	115	66				
	APR-SEP	101.0	91.0	90	115	65				
BIG HOLE RIVER near Melrose	APR-JUL	698.0	655.0	93	119	69				
	APR-SEP	760.0	705.0	92	118	68				
WILLOW CREEK near Harrison	APR-JUL	17.9	17.2	96	120	67				
	APR-SEP	20.0	19.3	96	125	65				

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVE.
LIMA	84.0	29.2	31.9	30.0
CLARK CANYON	257.0	158.3	151.8	147.6
RUBY RIVER	38.8	34.0	33.3	30.3

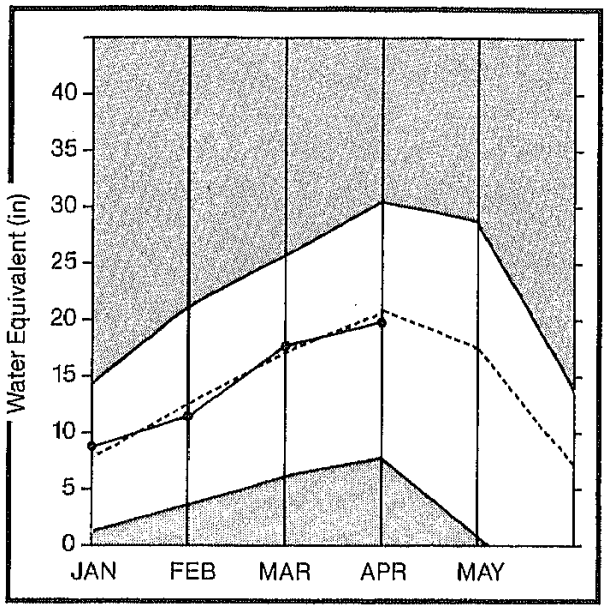
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVE.0	THIS YEAR AS % OF LAST YR.	AVERAGE
BEAVERHEAD	32	110	96
RUBY	13	103	85
BIGHOLE	29	105	91
BOULDER	15	98	08
JEFFERSON	71	105	92

*Corrected for upstream diversions or changes in reservoir storage.
Average is for 1961-00 period.

Madison Basin

Mountain snowpack* (inches)



* Madison

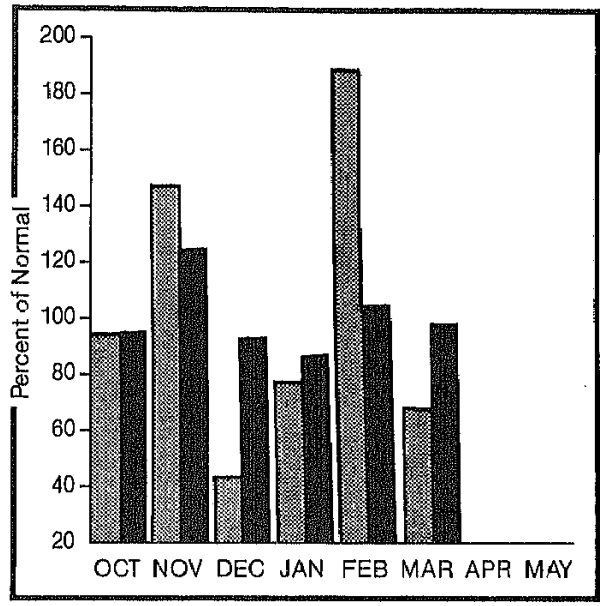
Maximum

Minimum

Average

Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation

Year to date precipitation

WATER SUPPLY OUTLOOK:

The snowpack is about 10 percent less than recorded on March 1. During March, the mountain precipitation was below average and melt was caused by warm temperatures. Spring and summer streamflows are forecast to be above average upstream for Hebgen Lake. Downstream, runoff from tributary streams is predicted to be below average. Some late season irrigation shortages can be expected along these smaller streams.

For more information contact your local Soil Conservation Service office.

MADISON RIVER BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	20 YR. AVE. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVE.)	MEAS. MAX. (% AVE.)	MEAS. MIN. (% AVE.)	PEAK FLOW (CFS)	PEAK DATE	LOW FLOW (CFS)	LOW DATE
MADISON RIVER near Grayling x	APR-JUL	388.0	420.0	108	123	93				
	APR-SEP	496.0	530.0	106	122	92				
MADISON RIVER near McAllister x	APR-JUL	672.0	650.0	96	113	81				
	APR-SEP	848.0	810.0	95	112	79				

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	xx USEABLE STORAGE xx THIS YEAR	LAST YEAR	AVE.
EHNIS LAKE	41.0	31.4	32.3	35.0
HEBGEN LAKE	378.0	278.5	297.0	233.6

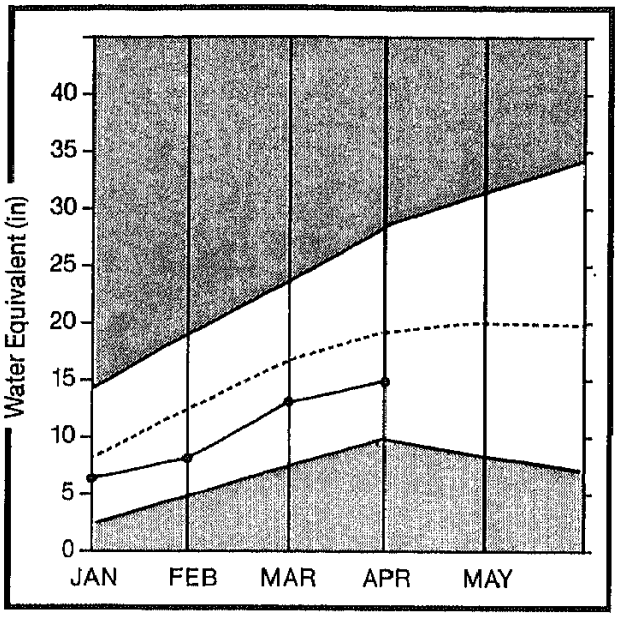
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVE.0	THIS YEAR AS % OF LAST YR.	AVERAGE
MADISON above HEBGEN	18	119	104
LOWER MADISON	20	101	84
MADISON	38	110	95

xCorrected for upstream diversions or changes in reservoir storage.
Average is for 1961-00 period.

Gallatin Basin

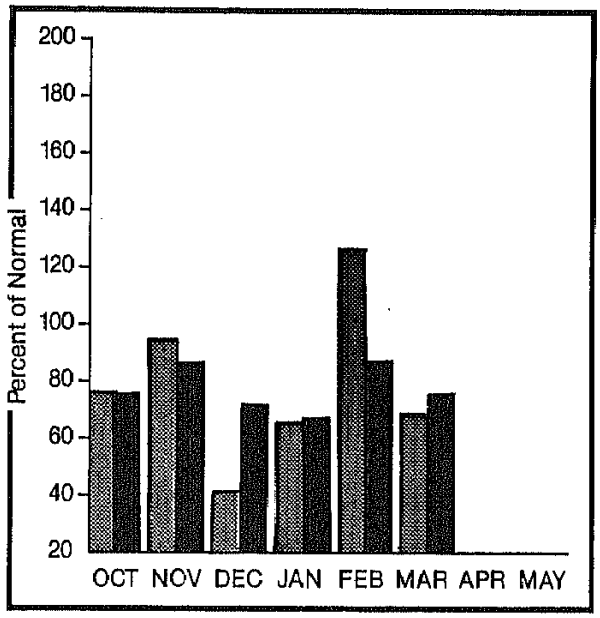
Mountain snowpack* (Inches)



* Gallatin

Meximum
Minimum
Average
Current

Precipitation* (percent of normal)



*Besed on selected stations

Monthly precipitation
Year to date precipitation

WATER SUPPLY OUTLOOK:

Mountain snowpack continues to be well below average particularly in the Bridger Range and Bozeman-Hyalite Creek areas south of Bozeman. Mountain precipitation was below average for March and some melt occurred at the lower and mid-elevations. Spring and summer streamflows are forecast to be well below average in all drainages. Shortages of irrigation supplies can be expected by late June on smaller low elevation streams and by July on the Gallatin River.

For more information contact your local Soil Conservation Service office.

GALLATIN RIVER BASIN

STREANFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	20 YR. AVE. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVE.)	MEAS. MAX. (% AVE.)	MEAS. MIN. (% AVE.)	PEAK FLOW (CFS)	PEAK DATE	LOW FLOW (CFS)	LOW DATE
GALLATIN RIVER near Gateway	APR-JUL	464.0	370.0	79	96	64				
	APR-SEP	545.0	430.0	70	95	63				
E & W FK. HYALITE CR. nr Bozeman x	APR-JUL	25.0	19.9	79	96	64				
	APR-SEP	29.0	22.4	77	93	62				
HYALITE CREEK near Bozeman x	APR-JUL	39.0	30.6	78	97	59				
	APR-SEP	45.0	35.2	78	98	58				
GALLATIN RIVER at Logan	APR-JUL	523.0	380.0	72	98	48				
	APR-SEP	611.0	445.0	72	98	48				

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	xx USEABLE STORAGE xx THIS YEAR	LAST YEAR	AVE.
MIDDLE CREEK	8.0	5.9	3.7	3.9

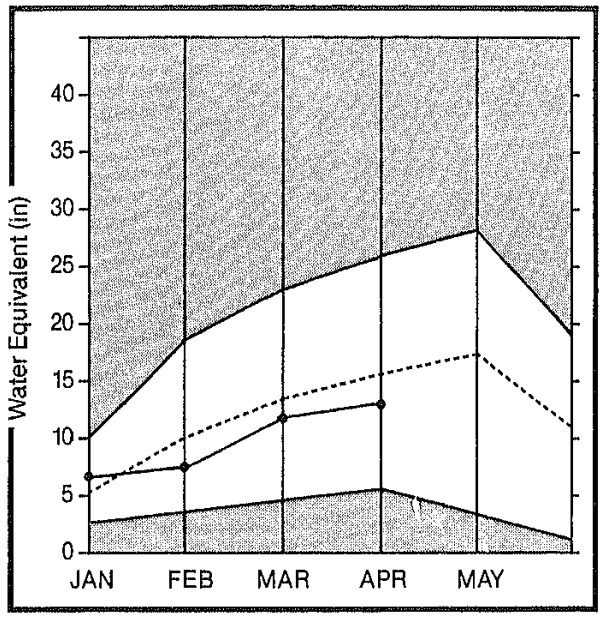
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVE.0	THIS YEAR AS % OF LAST YR.	AVERAGE
UPPER GALLATIN	14	102	80
EAST GALLATIN	13	90	67
GALLATIN	24	97	74

xCorrected for upstream diversions or changes in reservoir storage.
Average is for 1961-80 period.

Missouri Basin

Mountain snowpack* (inches)



* Missouri Toston to Fort Peck

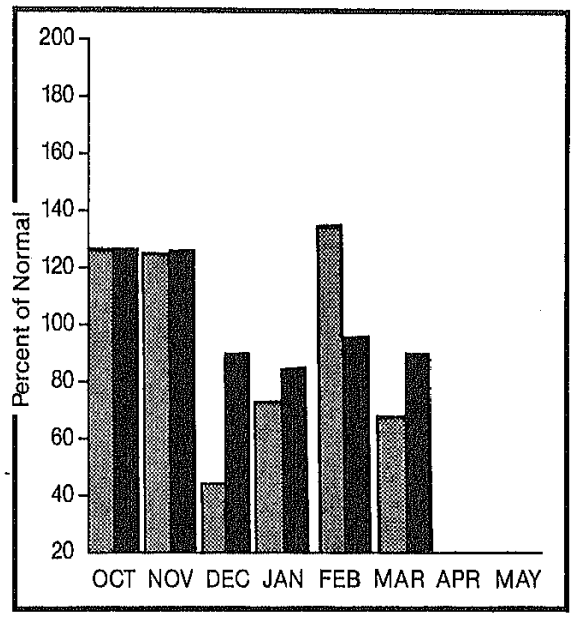
Maximum

Minimum

Average

Current

Precipitation* (percent of normal)



*Besed on selected stations

Monthly precipitation

Year to date precipitation

WATER SUPPLY OUTLOOK:

Warm temperatures causing snowmelt and below average mountain precipitation during March combined to drop snowpack percentages about 10 percent since March 1. Snowpacks vary from near average to well below average. Spring and summer streamflows are forecast to be below average from all drainages. Shortages of irrigation water supplies can be expected by late June on lower elevation streams and by early July on most other drainages for those not having stored water.

For more information contact your local Soil Conservation Service office.

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	20 YR. AVE. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVE.)	REAS. MAX. (% AVE.)	REAS. MIN. (% AVE.)	PEAK FLOW (CFS)	PEAK DATE	LOW FLOW (CFS)	LOW DATE
MISSOURI RIVER at Toston x	APR-JUL	2196.0	1900.0	86	123	60				
	APR-SEP	2545.0	2235.0	87	125	61				
SHEEP CREEK nr White Sulphur Spgs.	APR-JUL	19.0	17.3	91	132	53				
	APR-SEP	22.0	20.0	90	127	55				
BELT CREEK near Monarch	APR-JUL	123.0	101.0	82	116	48				
	APR-SEP	134.0	110.0	82	116	48				
MISSOURI RIVER at Fort Benton x	APR-JUL	3468.0	2825.0	81	125	51				
	APR-SEP	3980.0	3345.0	84	128	54				
MISSOURI RIVER at Virgelle x	APR-JUL	4030.0	3180.0	78	126	48				
	APR-SEP	4570.0	3735.0	81	129	51				
MISSOURI RIVER near Landusky x	APR-JUL	4383.0	3512.0	80	129	40				
	APR-SEP	4980.0	4135.0	83	132	51				
N.F. MUSSELSHELL near Delpine	APR-JUL	5.4	5.3	98	130	56				
	APR-SEP	6.4	6.2	96	141	63				
S.F. MUSSELSHELL above Martinsdale	APR-JUL	59.0	50.0	84	122	47				
	APR-SEP	63.0	52.0	82	121	44				
MISSOURI RIVER below Fort Peck x	APR-JUL	4428.0	3454.0	78	125	47				
	APR-SEP	4961.0	4030.0	81	132	48				
LAKE SAKAKAWEA Inflow x	APR-JUL	12239.0	11385.0	93	135	63				
	APR-SEP	12775.0	11860.0	92	136	63				

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	xx USEABLE STORAGE xx THIS YEAR	LAST YEAR	AVE.
CANYON FERRY LAKE	2043.0	1497.0	1394.0	1498.0
HELENA VALLEY	10.4	3.3	3.2	4.9
LAKE HELENA	10.4	10.9	10.7	9.8
HAUSER & HELENA	61.9	63.0	62.4	60.0
HOLTER LAKE	81.9	80.5	78.1	64.9
SMITH RIVER	10.6	7.5	9.6	7.6
NEMLAH CREEK	12.4	10.0	9.0	9.1
BAIR	7.0	3.2	1.2	5.2
MARTINSDALE	23.1	9.8	4.8	9.6
DEADMAN'S BASIN	72.2	37.4	48.0	49.7
FORT PECK LAKE*	18.9	14.2	15.7	15.0

*Million Acre Feet

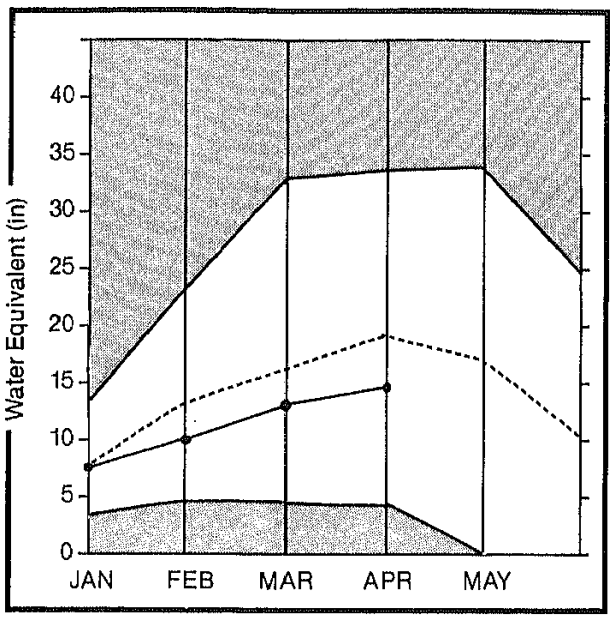
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVE.D	THIS YEAR AS % OF LAST YR.	AVERAGE
MISSOURI HEADWATERS	117	106	90
WEST SIDE MISSOURI	11	88	80
SMITH-BELT	11	93	86
MISSOURI MAINSTEM	22	91	84
SUN-TETON-MARIAS	18	78	72
JUDITH-MUSSELSHELL	19	85	80
MISSOURI above FORT PECK	161	99	86
MILK HEADWATERS	5	57	56
BEAR PAW	6	4	6
MILK RIVER	11	45	40
MISSOURI in MONTANA	169	97	85
MISSOURI blw YELLOWSTONE	277	111	93

xCorrected for upstream diversions or changes in reservoir storage.
Average is for 1961-80 period.

Sun,Teton and Marias Basins

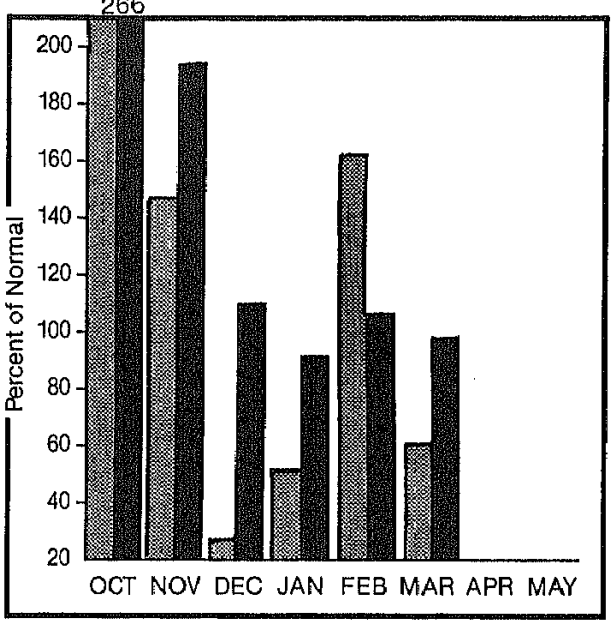
Mountain snowpack* (inches)



* Sun-Teton-Marias

Maximum
Minimum
Average
Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation
Year to date precipitation

WATER SUPPLY OUTLOOK:

Snowpack conditions deteriorated during March. Mountain precipitation for March was below average and melt was occurring at low and mid-elevations. The snowpack is presently well below average and less than it was a year ago. Spring and summer streamflows are forecast to be well below average on all drainages. Shortages of irrigation water supplies can be expected to develop by late June or early July for those users not having stored water.

For more information contact your local Soil Conservation Service office.

SUN-TETON-MARIAS RIVER BASINS

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	20 YR. AVE. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVE.)	REAS. MAX. (% AVE.)	REAS. MIN. (% AVE.)	PEAK FLOW (CFS)	PEAK DATE	LOW FLOW (CFS)	LOW DATE
SUN RIVER at Gibson Dam x	APR-JUL	522.0	407.0	77	100	56				
	APR-SEP	570.0	455.0	79	102	58				
TWO MEDICINE CREEK near Browning x	APR-JUL	235.0	173.0	73	108	40				
	APR-SEP	248.0	190.0	76	108	45				
BADGER CREEK near Browning	APR-JUL	113.0	87.0	76	111	43				
	APR-SEP	130.0	102.0	78	111	46				
SHIFT RESERVOIR Inflow nr Dupuyer	APR-JUL	74.7	59.0	78	112	46				
	APR-SEP	86.7	69.0	79	112	47				
CUT BANK CREEK at Cut Bank	APR-JUL	108.0	75.5	69	104	36				
	APR-SEP	114.0	82.0	71	104	40				
MARIAS RIVER near Shelby	APR-JUL	518.0	365.0	70	103	38				
	APR-SEP	542.0	385.0	71	103	39				

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	xx USEABLE STORAGE xx THIS YEAR	LAST YEAR	AVE.
GIBSON	99.1	72.6	55.2	46.2
PISHKUN	32.0	18.0	18.5	18.2
WILLOW CREEK	32.2	26.2	13.4	22.1
LOWER TWO MEDICINE LAKE		NO REPORT		
FOUR HORNS LAKE		NO REPORT		
SHIFT	30.0	9.9	10.7	16.8
LAKE FRANCES	112.0	94.5	24.8	71.2
LAKE ELWELL (TIBER)	1347.0	784.8	680.9	562.3

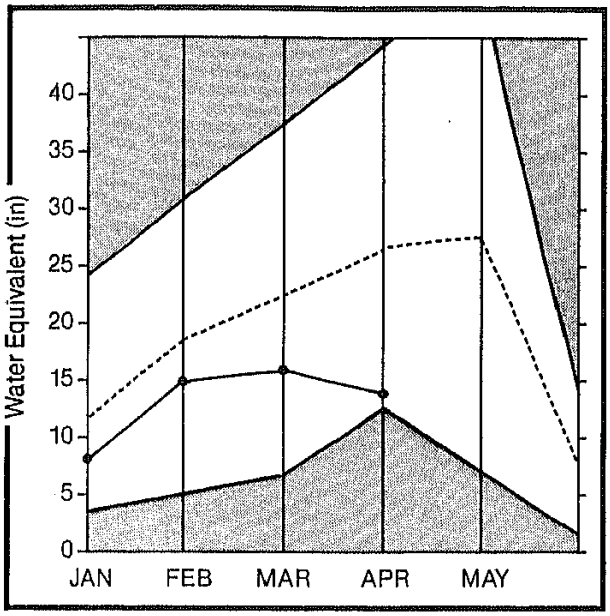
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVE.0	THIS YEAR AS % OF LAST YR.	AVERAGE
SUN-TETON	12	71	67
MARIAS	7	84	76
SUN-TETON-MARIAS	18	78	72

xCorrected for upstream diversions or changes in reservoir storage.
Average is for 1961-80 period.

St. Mary and Milk Basins

Mountain snowpack* (inches)



* St. Mary

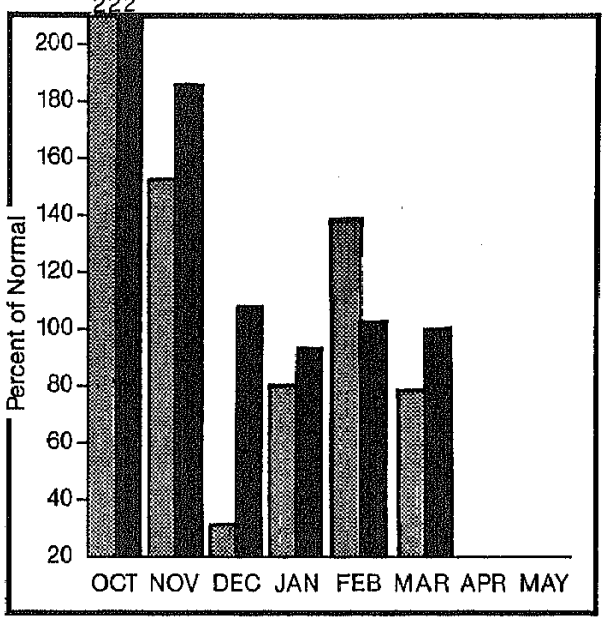
Maximum

Minimum

Average

Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation

Year to date precipitation

WATER SUPPLY OUTLOOK:

Below average March precipitation and warm temperatures reduced snowpack levels. Snow in mountains away from the Continental Divide has melted except for shaded high elevation areas. Spring and summer runoff is forecast to be well below average. However, reservoir storage is above average as a result of earlier runoff. Shortages of irrigation water supplies can be expected by mid to late June for those users not having stored water.

For more information contact your local Soil Conservation Service office.

ST. MARY and MILK RIVER BASINS

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	20 YR. AVE. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVE.)	REAS. MAX. (% AVE.)	REAS. MIN. (% AVE.)	PEAK FLOW (CFS)	PEAK DATE	LOW FLOW (CFS)	LOW DATE
SWIFTCURRENT CREEK at Sherburne *	APR-JUL	112.0	78.1	69	90	50				
	APR-SEP	128.0	95.5	74	95	55				
ST. MARY RIVER near Babb *	APR-JUL	416.0	288.0	69	83	55				
	APR-SEP	487.0	345.0	70	85	57				
MILK RIVER at Eastern Crossing *	APR-SEP	248.0	218.0	87	124	75				
MILK RIVER at Eastern Crossing	APR-SEP	81.7	33.7	41	77	28				

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVE.
LAKE SHERBURNE	64.3	50.5	31.9	24.0
FRESNO	127.0	99.7	16.3	86.7
BEAVER CREEK	3.5	3.3	1.1	2.1
NELSON	66.8	49.4	15.9	38.7

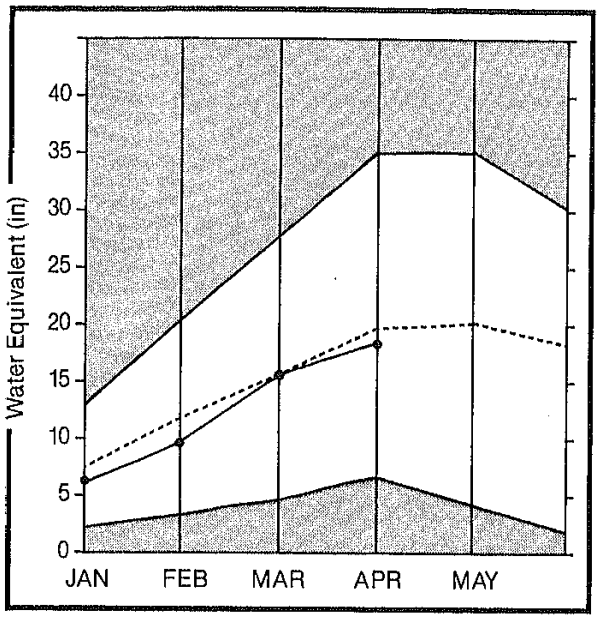
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVE.0	THIS YEAR AS % OF LAST YR.	AVERAGE
MILK HEADWATERS	5	57	56
BEAR PAW	6	4	6
MILK RIVER	11	45	48
ST. MARY	12	54	52
ST. MARY and MILK	10	48	48
BOW RIVER in ALBERTA	10	136	117
OLDMAN RIVER in ALBERTA	11	55	56

*Corrected for upstream diversions or changes in reservoir storage.
Average is for 1961-80 period.

Yellowstone Basin

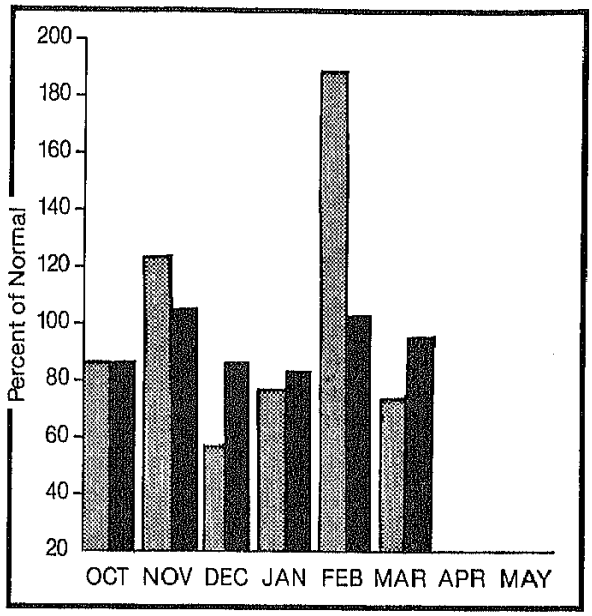
Mountain snowpack* (inches)



* Yellowstone above Big Horn

Maximum
Minimum
Average
Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation
Year to date precipitation

WATER SUPPLY OUTLOOK:

Snowpack deteriorated during March because of below average mountain precipitation and some snowmelt. Southern drainages have near average snowpack, decreasing to well below average in the northern drainages. Except for below average runoff from streams flowing out of the Crazy and Bridger Mountains, streamflows are expected to be near to a little below average. Irrigation water is expected to be short from streams out of the Crazy and Bridger Mountains but adequate elsewhere.

For more information contact your local Soil Conservation Service office.

YELLOWSTONE RIVER BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	20 YR. AVE. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVE.)	MEAS. MAX. (% AVE.)	MEAS. MIN. (% AVE.)	PEAK FLOW (CFS)	PEAK DATE	LOW FLOW (CFS)	LOW DATE
YELLOWSTONE at Lake Outlet	APR-SEP	826.0	900.0	108	122	96				
YELLOWSTONE at Corwin Springs	APR-JUL	1686.0	1590.0	94	108	80				
	APR-SEP	2027.0	1900.0	93	108	80				
YELLOWSTONE near Livingston	APR-JUL	1969.0	1017.0	92	106	78				
	APR-SEP	2379.0	2190.0	92	106	78				
BOULDER RIVER at Big Timber	APR-JUL	366.0	348.0	95	117	73				
	APR-SEP	398.0	370.0	92	115	71				
STILLWATER RIVER nr Absarokee x	APR-JUL	528.0	547.0	103	134	74				
	APR-SEP	632.0	650.0	102	133	73				
CLARKS FORK RIVER near Belfry	APR-JUL	563.0	615.0	109	134	84				
	APR-SEP	628.0	700.0	111	136	86				
COOKEY RESERVOIR Inflow	APR-JUL	49.5	41.4	83	113	55				
	APR-SEP	60.5	50.8	83	114	55				
YELLOWSTONE RIVER at Billings	APR-JUL	3833.0	3710.0	96	119	79				
	APR-SEP	4516.0	4340.0	96	118	78				
BIGHORN RIVER near St. Xavier x	APR-JUL	1794.0	2370.0	132	179	100				
	APR-SEP	1976.0	2620.0	132	180	101				
LITTLE BIGHORN RIVER near Hardin	APR-JUL	162.0	185.0	114	172	69				
	APR-SEP	182.0	207.0	113	171	69				
TONGUE RIVER near Decker	APR-JUL	244.0	260.0	106	159	48				
	APR-SEP	269.0	290.0	107	161	49				
YELLOWSTONE RIVER at Miles City x	APR-JUL	5906.0	6200.0	104	137	82				
	APR-SEP	6787.0	7180.0	105	138	83				
POWDER RIVER at Moorehead	APR-JUL	243.0	255.0	104	160	42				
	APR-SEP	263.0	276.0	104	160	42				
YELLOWSTONE RIVER near Sidney x	APR-JUL	6544.0	6870.0	104	141	79				
	APR-SEP	7518.0	7930.0	105	141	79				

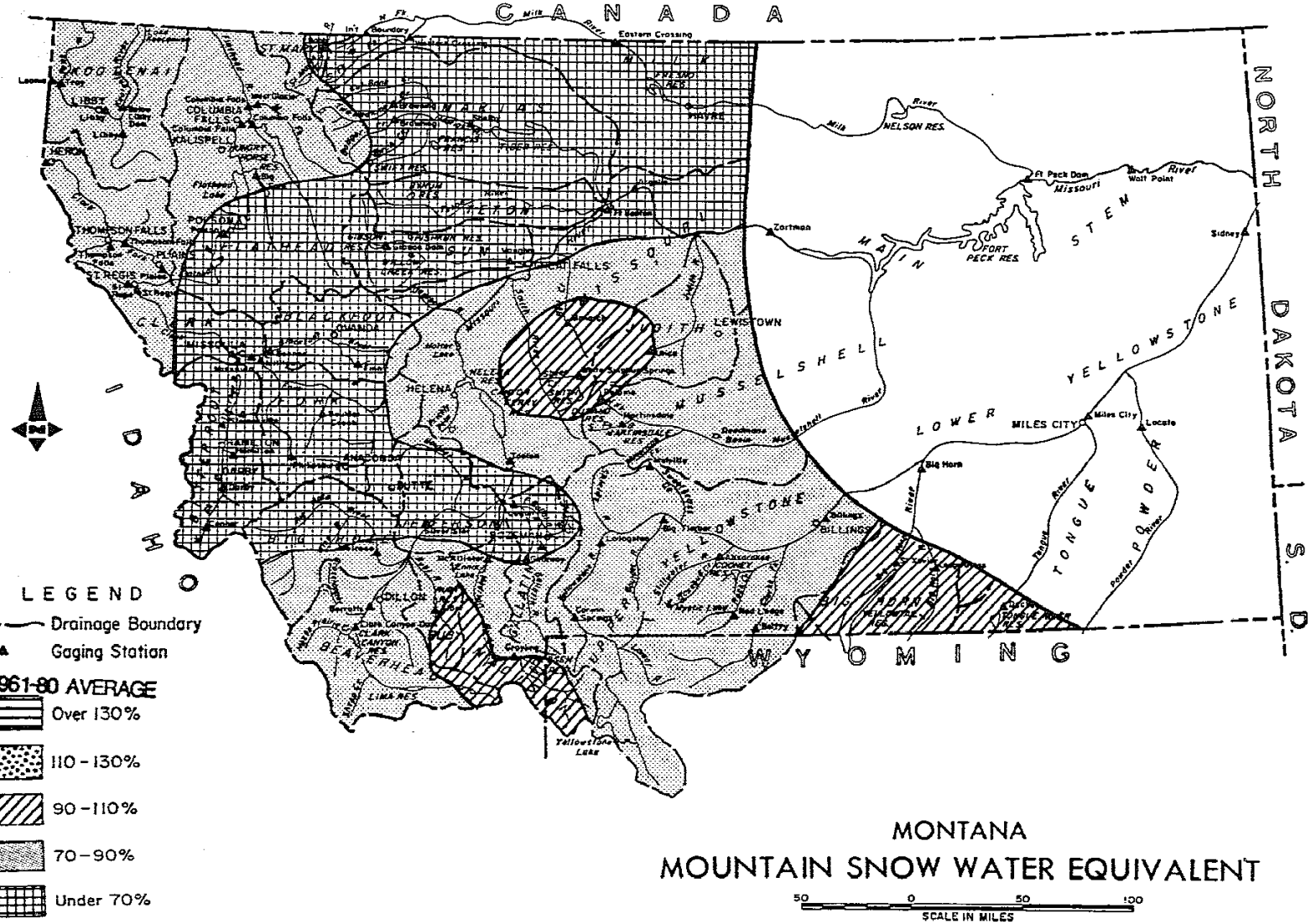
RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	xx USEABLE STORAGE xx THIS YEAR	LAST YEAR	AVE.
MYSTIC LAKE	21.0	0.3	1.0	4.2
COOKEY	27.4	22.0	21.7	15.8
BIGHORN LAKE	1356.0	709.6	866.7	607.2
TONGUE RIVER	68.0	30.2	16.2	41.6

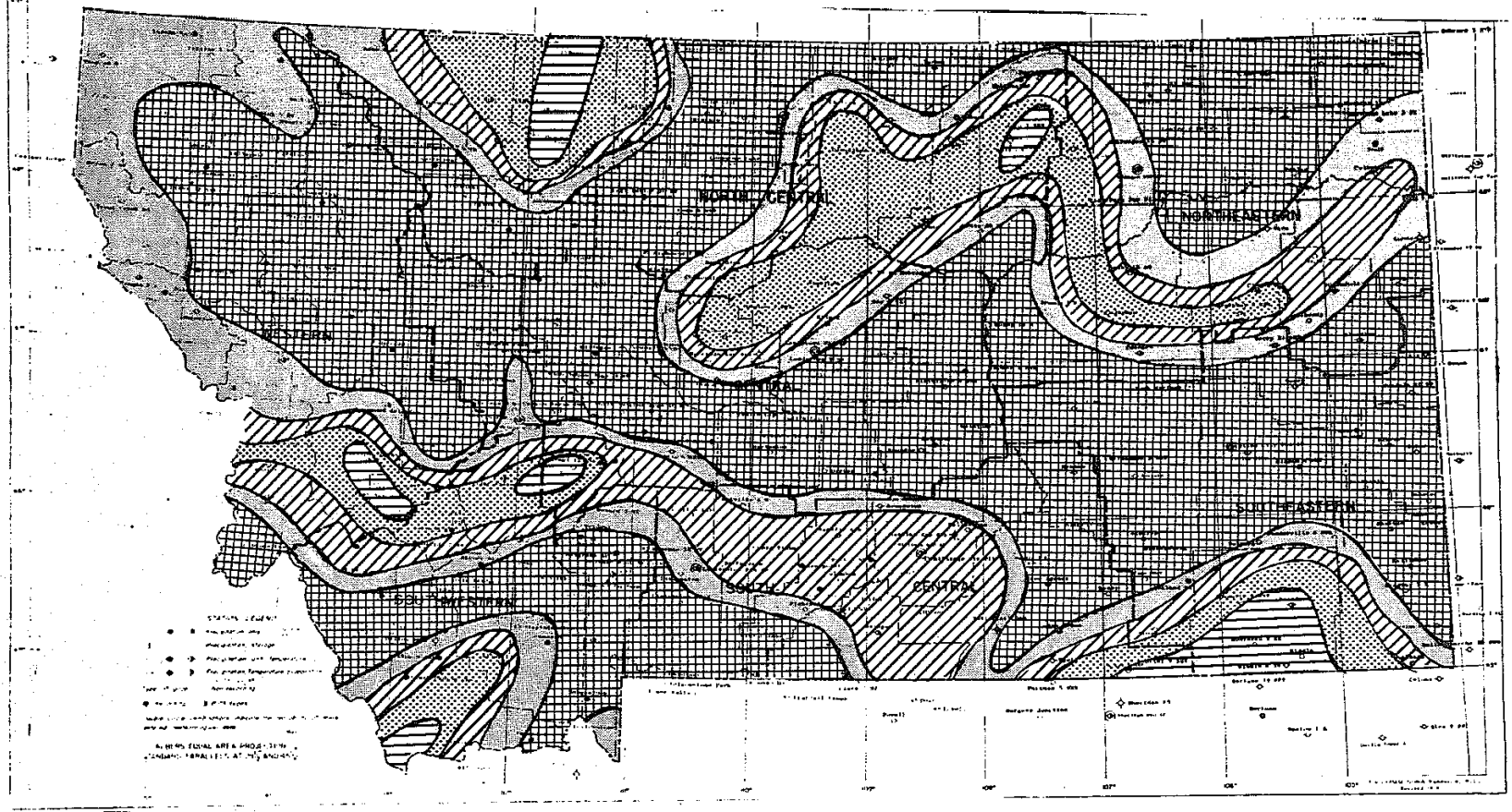
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVE.D	THIS YEAR AS % OF LAST YR.	AVERAGE
YELLOWSTONE ab LIVINGSTON	26	126	101
SHIELDS	10	86	65
BOULDER-STILLWATER	12	104	88
CLARK'S FORK-ROCK CREEK	22	128	102
YELLOWSTONE above BIGHORN	56	113	91
LITTLE BIGHORN	5	135	103
WIND RIVER (Wyoming)	20	197	147
BIGHORN RIVER (Wyoming)	34	150	116
BIGHORN BASIN (Total)	58	160	123
TONGUE RIVER (Wyoming)	15	133	108
POWDER RIVER (Wyoming)	15	148	110
YELLOWSTONE RIVER	125	133	104

xCorrected for upstream diversions or changes in reservoir storage.
Average is for 1961-80 period.


CANADA
NORTH DAKOTA S. D.
WYOMING
IDAHO
LEGEND
Drainage Boundary
Gaging Station
%1961-80 AVERAGE
Over 130%
110 - 130%
90 - 110%
70 - 90%
Under 70%
MONTANA
MOUNTAIN SNOW WATER EQUIVALENT
50 0 50 100
SCALE IN MILES
FEBRUARY 1, 1986

_Y PRECIPITATION



Over 130%

110 - 130%

90 - 110%

70 - 90%

Under 70%

MARCH 1986

Source: NWS
Great Falls, MT

The Following Organizations Cooperate With The Soil Conservation Service In Snow Survey Work

Canadian

Department of the Environment
- Atmospheric Environment Service
- Water Management Service

British Columbia Ministry of Environment
- Inventory and Engineering Branch, Hydrology Section

Alberta Environment
- Technical Services Division

Federal

U.S. Department of Agriculture
- Forest Service

U.S. Department of the Army
- Corps of Engineers

U.S. Department of Commerce
- NOAA, National Weather Service
- National Environmental Satellite Service

U.S. Department of the Interior
- Bureau of Indian Affairs
- Fish and Wildlife Service
- Geological Survey
- National Park Service
- Bureau of Reclamation

U.S. Department of Energy
- Bonneville Power Administration

State

Montana Conservation Districts
Montana Department of Fish, Wildlife, and Parks
Montana Department of Natural Resources and Conservation
Montana Department of State Lands
Montana State University - Agricultural Experiment Station
University of Montana - School of Forestry

Private

Big Sky of Montana
Butte Water Company
Flathead Valley Community College
Montana Power Company
Pondera County Canal & Reservoir Company

Other organizations and individuals furnish information for the snow survey reports. Their cooperation is gratefully acknowledged.